Does the new GCSE reform of Mathematics help to meet the changing demands of UK higher education and work places?

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Abstract:

This paper analyses the 2015 reform of General Certificate of Secondary Education (GCSE) mathematics in the United Kingdom. It examines whether the proposed changes are sufficient to bring about an improvement in standards in line with the 21st-century needs of UK higher education institutions and workplaces. This paper is based primarily on a literature review and analysis of secondary data. Cheng and Cheung's (1995) four-frame educational policy analysis tool has been used as the basis for analysing the reforms. Changes within the subject – such as expansion of course content, assessment objectives, structure and the format of qualifications –are already being implemented in further education (FE) colleges and schools in the UK. The conclusions drawn from the study indicate that changing the curriculum, course content, grading system and assessment criteria are all important and necessary prerequisites for true reform, but insufficient in themselves for effective implementation. In order to achieve the policy objectives, there must be a provision of additional funding and delegation of authority to the local level. The provision of additional resources will help to train and strengthen capacity of teachers, students and parents.

Introduction

GCSE mathematics reform is linked to the previous policy changes such as the national curriculum change in 2008, and subsequent changes proposed by the Conservative - Liberal Democrat government during 2010–15 (DfE, 2015).

Objectives of the policy analysis

What are the key changes in new GCSE course curriculum?

Does the new GCSE policy reform help students to better prepare for work or further study?

What are the key challenges and possible solutions to meet the 21st century demands of UK higher education and work place?

Methodology

This paper is based on available secondary data and a literature review, as well as the researcher's own experience of teaching in FE colleges.

Key changes to GCSE Mathematics

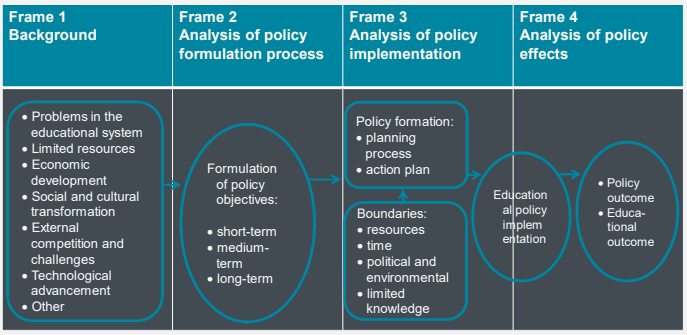
Grades and tiers – new grades are numbered 1-9, where 9 is the highest. GCSE maths has two-tier system.

Assessment objectives – more emphasis on mathematical problem solving and reasoning.

Structure – the new GCSE is linear rather than modular. Exams are conducted at the end of the course only.

Use of calculator – 30 to 50% of the marks relate to questions solved without use of a calculator.

Policy analysis tool (four-frame model)



Source: adapted from Cheng and Cheung, 1995.

Results and conclusions:

- There is a need to strengthen capacity at the local level – students, teachers, parents and school/college staff.
- From the government side, there seems to be a lack of detailed analysis on the need of workforce and funding.
- The government policy is very ambitious. It actually will need an extended time to meet the objectives.
- There has been only limited consultations with employers and education institutions to seek their perspectives.
- to be either unaware of the benefits of the changed system, or do not fully understand them.
- The typical opinion of the general public and students is along the lines that "mathematics is a hard and boring subject". This perception needs to be challenged and changed by evidence-based examples.

References

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